DOCUMENT RESUME

ED 384 662 TM 023 956

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TITLE Note Taking and Listening Comprehension on the Test of English as a Foreign Language. Research Report 34.
INSTITUTION Educational Testing Service, Princeton, N.J.
REPORT NO ETS-RR-91-18
PUB DATE Feb 91
NOTE 37p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *College Students; *English (Second Language); Foreign Students; Higher Education; Language Proficiency; *Language Tests; *Listening Comprehension; *Notetaking; Questionnaires; Responses; Second Language Learning
IDENTIFIERS *Test of English as a Foreign Language

ABSTRACT

This study examined the effects of taking notes in the portion of the Test of English as a Foreign language (TOEFL) listening comprehension section that contains short monologues, or "mini-talks." These effects were assessed in experimental testing sessions with students in intensive English language programs and with undergraduate and graduate international students (n=563). A multiple-choice questionnaire surveyed the students' reactions to the opportunity to take notes and their previous note-taking experience. Allowing students to take notes had little effect on their performance, and urging students to take notes significantly impaired their performance. These effects were observed even for students who reported being in the habit of taking many notes or reported having classroom instruction in note taking. Apparently, then, little benefit is gained by taking notes in the context of the present TOEFL mini-talks, perhaps because they are designed to assess listening comprehension with minimal demand placed on memory. Responses to the questionnaire aid in understanding the results and provide useful general information about the students' note-taking experiences and habits. Seven tables present study data, and an appendix gives a sample mini-talk script. (Contains 15 references.) (Author/SLD)

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TOEFL

TEST OF ENGLISH AS A FOREIGN LANGUAGE

Research Reports

REPORT 34
FEBRUARY 1991

Note Taking and Listening Comprehension on the Test of English as a Foreign Language

Gordon A. Hale
Rosalea Courtney

ED 384 662

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Note Taking and Listening Comprehension on the Test of English as a Foreign Language

Gordon A. Hale and Rosalea Courtney

Educational Testing Service
Princeton, New Jersey

RR-91-18



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Acknowledgments

The authors wish to extend their sincere thanks to the following people for their invaluable contributions:

Brent Bridgeman, Barbara Suomi, Carol Taylor, Russell Webster, Warren Willingham, and Protase Woodford of ETS, and Patricia Dunkel of the Pennsylvania State University, for general advice regarding the conduct of the study
Helen Berezovsky for assistance in selecting the test materials
Thomas Jirele and Philip Leung for programming the data analyses
Susan Chyn, Grant Henning, and Lawrence Stricker for reviewing an earlier draft of this report
Eleanor DeYoung, Joanne Farr, and Ruth Yoder for secretarial assistance

Particular gratitude is expressed to the on-site project coordinators, listed below, for their extensive efforts in arranging for data collection.

Marian Adnane, English Language Program for Foreign Students, University of Pennsylvania
Patrick Aquilina, The American Language Program, Columbia University
Julie Falsetti, International English Language Institute, Hunter College, City University of New York
Ann Kuhlman, University of Pennsylvania
Gail Markham, Rutgers University
Lesley Tyson, Temple University
Debra Young, Intensive English Language Program, Temple University

Finally, the authors are indebted to the TOEFL Research Committee for support of the project and for helpful suggestions concerning the research report.

The Test of English as a Foreign Language (TOEFL) was developed in 1963 by a National Council on the Testing of English as a Foreign Language, which was formed through the cooperative effort of more than thirty organizations, public and private, that were concerned with testing the English proficiency of nonnative speakers of the language applying for admission to institutions in the United States. In 1965, Educational Testing Service (ETS) and the College Board assumed joint responsibility for the program, and in 1973, a cooperative arrangement for the operation of the program was entered into by ETS, the College Board, and the Graduate Record Examinations (GRE) Board. The membership of the College Board is composed of schools, colleges, school systems, and educational associations; GRE Board members are associated with graduate education.

ETS administers the TOEFL program under the general direction of a Policy Council that was established by, and is affiliated with, the sponsoring organizations. Members of the Policy Council represent the College Board and the GRE Board and such institutions and agencies as graduate schools of business, junior and community colleges, nonprofit educational exchange agencies, and agencies of the United States government.



A continuing program of research related to the TOEFL test is carried out under the direction of the TOEFL Research Committee. Its six members include representatives of the Policy Council, the TOEFL Committee of Examiners, and distinguished English as a second language specialists from the academic community. Currently the Committee meets twice yearly to review and approve proposals for test-related research and to set guidelines for the entire scope of the TOEFL research program. Members of the Research Committee serve three-year terms at the invitation of the Policy Council; the chair of the committee serves on the Policy Council.

Because the studies are specific to the test and the testing program, most of the actual research is conducted by ETS staff rather than by outside researchers. However, many projects require the cooperation of other institutions, particularly those with programs in the teaching of English as a foreign or second language. Representatives of such programs who are interested in participating in or conducting TOEFL-related research are invited to contact the TOEFL program office. Local research may sometimes require access to TOEFL data. In such cases, the program may provide the data following approval by the Research Committee. All TOEFL research projects must undergo appropriate ETS review to ascertain that the confidentiality of data will be protected.

Current (1990-91) members of the TOEFL Research Committee are:

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Elizabeth C. Traugott	Stanford University

Abstract

This study examined the effects of taking notes in the portion of the TOEFL listening comprehension section that contains short monologues, or "mini-talks." These effects were assessed in experimental testing sessions with students in intensive English language programs and with undergraduate and graduate international students. A multiple-choice questionnaire surveyed the students' reactions to the opportunity to take notes and their previous note-taking experiences.

Allowing students to take notes had little effect on their performance, and urging students to take notes significantly impaired their performance. These effects were observed even for students who reported being in the habit of taking many notes or reported having had classroom instruction in note taking. Apparently, then, little benefit is gained by taking notes in the context of the present TOEFL mini-talks, perhaps because they are designed to assess listening comprehension with minimal demand placed on memory. Responses to the questionnaire aid in understanding the results and provide useful general information about the students' note-taking experiences and habits.

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Introduction

Objectives of the Study

One of the purposes of the Test of English as a Foreign Language (TOEFL®) is to assess students' ability to comprehend spoken English as it would typically occur in an academic setting. Toward this end, the listening comprehension section of the TOEFL test contains several parts, one of which consists of short monologues, called "mini-talks," followed by questions about them.

Students are not allowed to take notes, because the mini-talks and questions are designed in such a way that the student who comprehends what is said presumably should be able to answer the questions correctly without taking notes. Nevertheless, some observers have suggested that students be allowed to take notes, arguing that this would make the test more comparable to the typical academic listening situation. In light of this suggestion, the present study assessed the effects of note taking on performance in mini-talks taken from the TOEFL test.

To determine the merits of note taking, it is of value not only to examine its effects on average performance, but also to look at the correlation between test performance under note-taking and non-note-taking conditions. A low correlation (relative to test reliability) would show that allowing note taking affects the relative standing of students on the test and, to that extent, alters the character of the test.

In addition, it is useful to ascertain students' opinions about being able to take notes when listening to mini-talks. Among issues of concern are whether the students feel that being allowed to take notes is beneficial and whether their perception is affected by their previous note-taking experiences and habits. It is also of interest to determine whether students who report being most accustomed to taking notes are particularly likely to show positive effects of note taking on performance.

To address these issues, students listened to some mini-talks with the opportunity to take notes and listened to other mini-talks without being able to take notes (or the reverse order, depending on the group assignment.) The students then completed a multiple-response questionnaire asking for their opinions about the present note-taking experience and inquiring into their prior note-taking habits.

One other issue of interest concerned the way in which the note-taking situation was structured. The primary question of the study was how performance would be affected if students were simply allowed to take notes, given that the typical academic listening situation calls for letting students take notes or not, as they choose. An additional question was how performance would be affected if students were explicitly asked to take notes, as this question bears on the extent to which the actual act of taking notes would influence performance. Thus, students in the principal condition were simply permitted to take notes, whereas students in another condition were expressly asked to take notes. These two conditions are termed the "Note Taking Allowed" and "Note Taking Urged" conditions, respectively. In each condition,

a comparison was made between a test situation involving note taking and one involving no note taking.

Relevant Literature

In the literature there has been an emphasis on two general functions of note taking: encoding and external storage (cf. DiVesta & Gray, 1972; Fisher & Harris, 1973). Encoding refers to the role of note taking in ensuring that the lecture information is properly understood and coded into memory. This can include increasing the student's attention to the lecture (Frase, 1970), increasing awareness of the organization of the talk (Dunkel & Pialorsi, 1982; Einstein, Morris, & Smith, 1985), inducing the student to compare the information heard with prior knowledge (DiVesta & Gray, 1972), and other such influences. External storage, on the other hand, typically refers to the role played by the notes in reviewing for a test given after a delay.

If note taking were allowed in connection with the TOEFL mini-talks, its primary function would involve encoding, or processes that occur at the time the notes are taken. The external storage, or review, function of notes would be minor, primarily because the test is given immediately, thus ruling out any substantial benefit associated with the use of notes to forestall long-term forgetting.[1] Thus, the studies in the literature that appear most relevant to the present research are those dealing with the encoding function of note taking, where an immediate test is used. And of those studies, the ones that relate most directly to the principal issue here--namely, whether the opportunity to take notes affects performance--are studies that have included a comparison between note-taking and non-note-taking situations.

Some such studies have found that permitting note taking has a positive effect under certain circumstances (e.g., Barnett, DiVesta & Rogozinski, 1981; DiVesta & Gray, 1972; 1973; Einstein et al., 1985). Other studies have failed to find an effect (e.g., Carter & Van Matre, 1975; Dunkel, 1986). And still others have observed an interfering effect (e.g., Aiken, Thomas, & Shennum, 1975; Peters, 1972). Although reasons for the differences in results are not entirely obvious, a general conclusion is that the opportunity to take notes does not necessarily produce beneficial effects. Rather, the effects of being able to take notes may depend heavily on the conditions under which note-taking effects are assessed, as will be considered further in the Discussion section.

With the exception of the study by Dunkel (1986), the research just cited has involved only native English speakers (although other issues related to

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[1]Granted, students would need to be allowed to keep their notes before them while answering the questions (which was the case in this study), as it would not be practical to withdraw the notes after each mini-talk in this type of test. Nevertheless, because the test is given immediately, the primary benefit of note taking in this case is believed to be linked to processes occurring during the time the notes are taken, or encoding processes.

note taking have been studied with nonnative English speakers). It is possible that the effects of note taking may differ for nonnative English speakers; as Dunkel and Davey (1989) note, these students process aural information in English more slowly than do native English speakers, and they may also differ in note-taking experiences and habits. Still, results of these studies provide a useful framework for interpreting the results of the present research with nonnative English speakers.

Method

Subjects

A total of 563 international students were tested, 288 students in four intensive English programs and 275 students, both graduate and undergraduate, enrolled in academic coursework in three universities. The students were invited to participate and were offered $20 to do so. A total of 69% of the students were college graduates. All were nonnative English speakers. Native languages of the students were Chinese, including several major dialects (with Chinese speakers comprising 27% of the total sample), Japanese (18%), Spanish (8%), Korean (6%), Arabic (5%), French (5%), and 39 other language groups with 3% or fewer students in each. Native countries represented were the People's Republic of China (22% of the sample), Japan (18%), the Republic of Korea (6%), Taiwan (5%), and 65 other countries with 3% or fewer students from each.

Materials

Mini-talks. The six mini-talks used in the study were drawn from previously disclosed TOEFL tests. The mini-talks ranged in length from 180 to 250 words and were presented at an average pace of 145 words per minute. Each mini-talk was presented on tape and was followed by five questions, also presented on tape, with response options appearing in the test booklet. The mini-talks were separated into two groups. The three mini-talks presented first, with their accompanying questions, were labeled Test A, and the three mini-talks presented second were labeled Test B. Prior to beginning Test A, the students were given two "warm-up" questions based on a condensed mini-talk.

Although the mini-talks required no prior knowledge in any subject-matter area, they could nevertheless be classified according to whether the topic related to (a) the humanities or social sciences, (b) the biological or physical sciences, or (c) a subject of general interest. One mini-talk of each type was used in Test A, and one of each type was used in Test B. The appendix shows one of the mini-talks used in the study. (The full set of six mini-talks cannot be presented, as many of them must remain secure for use in another context.) In the script, the abbreviations MA and MB refer to "Man A" and "Man B," the two people who recorded the mini-talk and questions. Of the six mini-talks, three were recorded by a man--two in Test A and one in Test B--and three were recorded by a woman.

Questionnaire. In the questionnaire, the students were asked for their reactions to the present note-taking situation and about their prior note-taking experiences and habits. The questionnaire consisted of two parts. In the first part, the students were given several statements and told to indicate the extent to which they agreed with each. Four response options were provided: "I strongly disagree," "I disagree," "I agree," and "I strongly agree." In the second part of the questionnaire the students were asked several questions, and for each question the students checked the

appropriate response option. The statements and questions appearing in the questionnaire can be seen in Tables 5, 6, and 7 of the Results section.

Experimental Design

Table 1 depicts the study's design. Each student received Test A followed by Test B. There were four groups: (a) Note Taking Allowed condition, Order 1; (b) Note Taking Allowed condition, Order 2; (c) Note Taking Urged condition, Order 1; and (d) Note Taking Urged condition, Order 2. In the Note Taking Allowed condition, note taking was simply permitted during one of the two tests, whereas in the Note Taking Urged condition, students were requested to take notes during one of the two tests. For Order 1 in each case, the note-taking situation was associated with Test A, and the non-note-taking situation, with Test B; whereas for Order 2, the reverse was true--i.e., the non-note-taking situation was associated with Test A, and the note-taking situation, with Test B.

Inclusion of both intensive English language students and academic students in each experimental group was intended to ensure representation of a wide range of proficiency in each group, comparable to the range found among TOEFL examinees.

Procedure

The students were tested in groups by a test administrator (author GH) and a monitor (author RC). The general test-taking instructions were printed on the students' test booklets and read aloud by the test administrator; additional test-taking instructions were presented via tape recorder. The specific instructions regarding note taking were presented via tape recorder and the essential points were repeated by the test administrator. (See Instructions, below.)

As noted above, the students received Test A (i.e., first three mini-talks) followed by Test B (the next three mini-talks), with note-taking associated with one test, and non-note-taking associated with the other, the order of assignment depending on the student's experimental group. For each question, the students responded by locating the correct answer in the test booklet and marking the letter corresponding to the correct answer on a separate answer sheet. Twelve seconds were allowed for responding to each question. The students were allowed to keep their notes before them while answering the questions. Prior to beginning Test A, the students were given the two warm-up questions based on a condensed mini-talk in order to provide practice in finding the correct answer and marking the answer sheet. After finishing Tests A and B, the students filled out the questionnaire. The whole session lasted approximately 50 minutes.

Instructions. Shown below are the tape-recorded instructions for each condition of the study; portions marked by brackets were repeated by the test administrator after presenting the tape-recorded instructions.

Table 1

Experimental Design

Note Taking Allowed Condition

Order 1 (Note taking for Test A; no note taking for Test B)[a]

N = 148 (79 students from English language program 1;
69 academic students from University 1)

Order 2 (No note taking for Test A; note taking for Test B)

N = 138 (66 students from English language program 2;
72 academic students from University 2)

Note Taking Urged Condition

Order 1 (Note taking for Test A; no note taking for Test B)

N = 130 (68 students from English language program 3;
62 academic students from University 2)[b]

Order 2 (No note taking for Test A; note taking for Test B)

N = 147 (75 students from English language program 4;
72 academic students from University 3)

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[a]Students in all groups received Test A (3 mini-talks, 15 total items) followed by Test B (3 different mini-talks, 15 total items).

[b]University 2 contributed academic students to each of two different experimental groups

In the non-note-taking situation students were given the following instructions:

[You may not take notes when you listen to the talks in this part of the test. Also, you may not write in your test book. Remember, you may not take notes when you listen to these talks.]

In the Note Taking Allowed condition, students were given the following instructions before the test assigned to the note-taking situation:

[If you wish, you may take notes when you listen to the talks in this part of the test.] You may take notes either in English or in another language. [In your test book are special pages on which to write your notes.] These are the pages with the word "Notes" at the top. [Your notes will not be graded. We want to see how note taking might help people to take the test. So remember that, if you wish, you may take notes when you listen to these talks. You may not write on any other page of your test book.]

In the Note Taking Urged condition, students were given the following instructions before the test assigned to the note-taking situation:

[Please take notes as you listen to the talks in this part of the test.] You may take notes either in English or in another language. Also, you may write many notes or just a few notes. But please be sure to write some notes. [In your test book are special pages on which to write your notes.] These are the pages with the word "Notes" at the top. [Your notes will not be graded. We want to see how note taking might help people to take the test. So please be sure to take notes when you listen to these talks. You may not write on any other page of your test book.]

Results

Performance Effects

Note Taking Allowed. The situation of primary interest in the study was the Note Taking Allowed condition. Table 2 presents the mean test scores in this condition for each order. It is apparent that Test B, presented second to all students, yielded higher scores than did Test A, presented first. This difference, in itself, was not of concern here (and could have been due either to differences in test difficulty or to a practice effect). The important question was whether this difference was significantly greater (or less) for Order 2 than for Order 1, according to the analysis described below. If note taking were to have a positive effect, it would be manifested as a greater superiority of Test B over Test A for Order 2 than for Order 1.

Table 2

Note Taking Allowed Condition:
Means and Standard Deviations (in Parentheses) of Test Scores

	Test A	Test B
Order 1 (N = 148)		
(Note taking allowed for Test A; no note taking for Test B)	7.95 (2.96)	8.65 (3.17)
Order 2 (N = 138)		
(No note taking for Test A; note taking allowed for Test B)	10.56 (2.86)	11.50 (2.82)

An analysis of variance was performed, in which the between-subject factors were Order and Educational Status (i.e., intensive English vs. academic students), and the dependent variable was the difference between Test A and Test B. No effect even approached significance. As discussed above, the influence of note taking is reflected in the Order effect. The fact that this effect was nonsignificant, $F < 1$, shows that being allowed to take notes had little influence on the students' performance. Also, the fact that Educational Status did not interact significantly with Order shows that note taking was no more likely to affect performance for the academic students than for the intensive English students.

Note Taking Urged. Table 3 presents the mean scores for students in the Note Taking Urged condition. In this case, the difference in favor of Test B

over Test A was considerably less for Order 2 than Order 1, showing that when the students were urged to take notes, their performance was actually impaired. This conclusion was reinforced in an analysis of variance comparable to that performed for the Note Taking Allowed condition. In this case the Order effect was highly significant, F (1,273) = 20.83, $p<.001$, indicating a negative effect of being urged to take notes. Other effects were nonsignificant, including the interaction between Order and Educational Status, showing that the negative effect of urging the students to take notes was equally great for intensive English students and academic students.

Table 3

Note Taking Urged Condition:
Means and Standard Deviations (in Parentheses) of Test Scores

	Test A	Test B
Order 1 (N = 130)		
(Note taking urged for Test A; no note taking for Test B)	9.38 (3.17)	10.92 (3.01)
Order 2 (N = 147)		
(No note taking for Test A; note taking urged for Test B)	10.17 (3.46)	10.35 (3.30)

Test Reliabilities and Correlations. Analyses were performed to determine, for each subgroup, the coefficient-alpha reliabilities of Test A and Test B, and the correlation between Test A and Test B. The results of these analyses are presented in Table 4.

Table 4

Test Reliabilities and Correlations

	Reliability		Correlation
	Test A	Test B	Between Tests
Note Taking Allowed, Order 1	.68	.72	.63
Note Taking Allowed, Order 2	.71	.74	.75
Note Taking Urged, Order 1	.74	.75	.68
Note Taking Urged, Order 2	.81	.78	.74

The reliabilities of the two tests were relatively high, even though each test contained only 15 items. So the tests apparently provided a reasonably sound basis for measurement of note-taking effects. Also, there was no clear difference between tests with respect to reliability. Of particular note, the correlations between tests were nearly as large as the reliability coefficients, so that the correlations corrected for attenuation were all above .90. This suggests that the relative standing of students was not markedly different for the note-taking and non-note-taking situations.

Questionnaire Data

Questions about the present testing situation. Data on the students' responses to the questionnaire items are presented in Tables 5, 6, and 7. For the statements appearing in Tables 5 and 6, the students had been given four response options--"strongly disagree," "disagree," "agree," and "strongly agree." However, the data were combined across the two "agree" categories and across the the two "disagree" categories, as inspection of the data broken down by all four categories did not appear to alter the general conclusions. The proportion of students agreeing with each statement are presented. The data are combined for Orders 1 and 2, as this factor should have little bearing on the responses.

Of initial interest were the data in the top half of Table 5, which indicate the students' general reactions to the present note-taking experience. A small majority of students agreed with the statement, "Taking notes helped me to answer the questions better." There was also a moderate tendency for the students to report feeling more at ease when they could take notes. To the extent that the students felt it advantageous to take notes, the reported advantage appeared to lie in helping the students remember the information in the talks, rather than helping them to listen carefully or to understand the talks. It is not clear why fully three-fourths of the students believed note taking helped them remember the information in the talks. It appears that there was a discrepancy between students' perceptions and reality, in that the students were unaware that note taking, on average, did not help them answer the questions better in this situation.

The items at the bottom of Table 5 further help to explain the students' feelings about the value of note taking in the present situation. There was widespread sentiment that there was not enough time for taking notes. There was substantial agreement that taking notes would have helped more if the questions had asked about details, such as names and dates. And there was substantial disagreement with the statement that the talks were too easy for note taking to help. For the other statements there was no strong tendency toward agreement or disagreement.

Questions about note-taking experiences and habits. The students were asked not only about note taking in the present situation, but also about their general note-taking habits and experiences. This was done partly to permit analyses of performance effects separately for groups differing in these respects, and also to obtain general information regarding students' perceptions of the value of note taking.

Table 5

Questionnaire Items about Present Note-Taking Experience: Proportion of Students Agreeing with Each Statement

	Note Taking Allowed	Note Taking Urged
GENERAL STATEMENTS ABOUT THE VALUE OF NOTE TAKING		
Taking notes helped me to answer the questions better.	.56	.57
Taking notes made it more difficult to understand the talks.	.39	.46
I felt more at ease when I could take notes than when I could not.	.64	.61
Taking notes made the test more difficult for me.	.33	.37
Taking notes helped me to listen carefully to the talks.	.45	.37
Taking notes helped me to understand the talks.	.48	.39
Taking notes helped me to remember the information in the talks.	.77	.72
STATEMENTS ABOUT SPECIFIC ASPECTS OF NOTE TAKING		
I wanted more time to review my notes before answering the questions.	.51	.53
I actually used my notes when I answered the questions.	.49	.50
It was difficult to switch from taking notes to marking my answer sheet.	.47	.49
I had enough time to take as many notes as I wanted.	.18	.15
The questions were about things I had written in my notes.	.51	.56
The talks were too short for note taking to help me very much.	.46	.46
The talks were too easy for note taking to help me very much.	.21	.21
Taking notes would have helped me more if the questions had asked about details such as names and dates.	.83	.82

Table 6

Questionnaire Items about American Classroom Note-Taking Experiences: Proportion of Students Agreeing with Each Statement (Academic Students Only)

	Note Taking Allowed	Note Taking Urged
Taking notes is more helpful in American class lectures than in the test I took today.	.92	.93
Taking notes in American class lectures helps me get better exam marks.	.90	.93
In American class lectures I usually have enough time to take as many notes as I want.	.58	.53
Taking notes helps me listen carefully to American class lectures.	.67	.56
Taking notes helps me to understand American class lectures.	.80	.73
Taking notes helps me remember the information in American class lectures.	.96	.95
Taking notes in an American class lecture helps me to organize the information after the lecture is over.	.95	.96
Taking notes in American class lectures gives me useful information to study for exams.	.97	.96

Table 7

Questions about Note-Taking Instruction and Habits:
Proportion of Students Giving Each Response

		Note taking Allowed	Note Taking Urged
How many notes do you usually take in an American class lecture? (academic students only)	None	.00	.01
	Few	.10	.09
	Some	.46	.53
	A lot	.40	.33
In your native country, how many notes did you usually take in class lectures?	None	.04	.02
	Few	.14	.14
	Some	.33	.40
	A lot	.50	.44
How many notes did you take on the test today?	None	.26	.05
	Few	.57	.68
	Some	.15	.23
	A lot	.01	.03
In what language do you usually take notes in an American class lecture? (academic students only)	English	.79	.77
	Native lang.	.01	.01
	Both	.18	.18
	Another	.00	.00
In what language did you take notes on the test today?	English	.89	.87
	Native lang.	.04	.02
	Both	.08	.11
	Another	.00	.00
Have you had any classroom instruction in how to take notes in English?	Yes	.22	.27
	No	.78	.73
[If "yes"] How many total hours of classroom instruction have you had ..."	< 1 hr.	.29	.19
	1-3 hrs.	.46	.35
	3-5 hrs.	.09	.15
	> 5 hrs.	.15	.32
Have you had any classroom instruction in how to take notes in a language other than English?	Yes	.32	.26
	No	.68	.74
[If "yes"] How many total hours of classroom instruction have you had..."	< 1 hr.	.27	.30
	1-3 hrs.	.32	.27
	3-5 hrs.	.12	.16
	> 5 hrs.	.29	.27

Table 6 presents the academic students' responses to questions about note-taking habits and experiences in American class lectures. There was very substantial agreement that taking notes is more helpful in class lectures than in the present test. There was also considerable agreement that taking notes in lectures helps one to get better test scores, and that the value of note taking in lectures lies in assisting memory, producing notes to study, and helping to organize information after the lecture. There was also agreement that taking notes helps one to understand a class lecture, but less strong agreement that taking notes helps one to listen to the lecture. Only a small majority agreed with the statement that there is enough time for note taking in lectures.

Table 7 presents a series of questions about note-taking habits and about instruction in note taking received. Students largely reported taking "some" or "a lot" of notes in class lectures but "none" or "few" notes in the present situation.[2] Both in American class lectures (for academic students) and in the present situation, English was the predominant language of note taking, with some students taking notes in both English and their native language. About one-fourth to one-third of the students reported having had any classroom instruction in note taking; amounts of reported instruction varied widely. (Note that the full text of the seventh question, which paralleled the sixth, was "How many total hours of classroom instruction have you had in how to take notes in English?" Analogously, the wording of the ninth question paralleled that of the eighth.)

Performance Effects for Student Subgroups

Although the performance analyses reported earlier showed note taking to have no positive effect overall, it was believed that note taking might have a positive effect for certain groups of students, as identified by their questionnaire responses. One such group consisted of those who are in the habit of taking notes. Analyses of variance were conducted to determine the influence of note taking (a) for those who answered "a lot" to the question, "In your native country, how many notes did you usually take in class lectures?", and (b) for those who answered "a lot" to the question, "How many notes do you usually take in an American class lecture?" (The second analysis involved academic students only.) The dependent variable, as before, was the difference between Test A and Test B. Factors were Order and Educational Status in the first analysis, and Order in the second analysis. Separate analyses were conducted for the Note Taking Allowed and Note Taking Urged conditions.

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[2]Examination of the students' actual note sheets indicated that 75% of the students in the Note Taking Allowed condition made at least some notations, and 90% of the students in the Note Taking Urged condition did so. Analyses of either the quantity or quality of the students' notes would be quite complex and were beyond the scope of this study.

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For the Note Taking Allowed condition, the results indicated no significant Order effect in either analysis, showing that note taking had little influence on performance, $F < 1$. For the Note Taking Urged condition, however, a significant Order effect in both analyses showed that note taking impaired performance, $F(1, 117) = 11.73$, $p<.001$, and $F(1, 42) = 5.22$, $p<.05$, respectively. Thus, these results parallel those for the entire sample: for students who are in the habit of taking many notes, the opportunity to take notes was not beneficial, and being urged to take notes was detrimental.

It was also thought possible that students who have had instruction in taking notes might show positive effects of note taking. So analyses of variance--separately for Note Taking Allowed and Urged conditions--were conducted for those who answered "yes" to the question, "Have you had any classroom instruction in how to take notes in English?" Analyses were also conducted for those who answered "yes" to the question, "Have you had any classroom instruction in how to take notes in a language other than English?" These analyses were conducted for intensive English students only, since fewer than one-fifth of the academic students answered "yes" to these questions. In each analysis, the difference between Test A and Test B was the dependent variable, and Order was the independent factor.

In analyses for the Note Taking Allowed condition, the Order effect again was nonsignificant, $F < 1$, showing that note taking did not influence performance. In analyses for the Note Taking Urged condition, the Order effect was in the direction of a negative influence of note taking in both cases, reaching significance in the second case, $F(1, 45) = 13.80$, $p<.001$, and approaching significance in the first, $p = .08$. Again, the results generally paralleled those observed for the whole sample in showing that being allowed to take notes had no effect on performance for students who reported having instruction in note taking; urging these students to take notes generally impaired their performance.

An analysis was also conducted (for the Note Taking Allowed condition) for those who reported taking notes in the present situation--that is, all except those who responded "none" to the question, "How many notes did you take on the test today?" (Note that the vast majority of students who reported taking notes responded "few" to the above-mentioned question, so that a separate analysis for those responding "some" or "a lot" could not be performed due to the small number of such students.) Factors were Order and Educational Status, and the dependent variable was the difference between tests. Once again, the Order effect was nonsignificant, $F < 1$, indicating that the opportunity to take notes did not improve performance, even when the analysis was limited to students who reported having taken notes. Other effects were also nonsignificant.

Finally, analyses were conducted for students who agreed, and for students who disagreed, with the statements: (a) "Taking notes helped me to answer the questions better" and (b) "I felt more at ease when I could take notes than when I could not." In each case, the factors were Order and Educational Status, and the dependent variable was the difference between tests. For the Note Taking Allowed condition, all effects were nonsignificant in analyses for those who agreed, and in analyses for those who disagreed,

with each of these two statements. For the Note Taking Urged condition, the Order effect was significant, showing a performance impairment due to note taking, (a) in analyses for those who agreed with each of these statements, $F(1,154) = 12.54$, $p < .001$; $F(1,114) = 21.31$, $p < .001$, for the two statements respectively, and (b) in analyses for those who disagreed with each of the statements, $F(1,161) = 13.32$, $p < .001$; $F(1,102) = 7.17$, $p < .01$, respectively. Other effects in these analyses were nonsignificant. Thus, being allowed to take notes produced no significant benefit, and being urged to take notes significantly impaired performance, even for students who reported that taking notes helped them answer the questions better or made them feel more at ease. These results further support the observation that the students' perceptions of the benefits of note taking were not coincident with the reality of the situation.

Questionnaire Data for Student Subgroups

It is also useful to examine the questionnaire data separately for some of the student subgroups just described, to determine if perceptions about the value of note taking are linked to certain student characteristics.

First, it was of interest to examine differences in response according to whether students habitually took many notes. For this purpose, students' note-taking habits were defined on the basis of their responses to the question, "In your native country, how many notes did you usually take in class lectures?" (Data from this question were used rather than the question about note taking in American class lectures because it reflects long-standing note-taking habits, and because the analysis for most questions could include the entire sample and not just the academic students.) Students who responded "a lot," who were labeled "frequent note takers," were contrasted with those who responded "none," "few," or "some," who were labeled "nonfrequent note takers." The data were analyzed separately for the Note Taking Allowed and Note Taking Urged conditions.

For each statement shown in Tables 5 and 6, the number of students agreeing with the statement was determined separately for frequent and nonfrequent note takers. Then, those instances were identified in which the percentage of agreement was significantly different for these two groups at the .05 level, according to chi-square analyses. Significant differences were found for only two statements. For the Note Taking Allowed condition only, frequent note takers disagreed more than did nonfrequent note takers with the statement, "The talks were too short for note taking to help me very much," $\chi^2(1, N = 277) = 8.84$, $p<.01$. And for both conditions (in analyses for academic students only), frequent note takers agreed more than did nonfrequent note takers with the statement, "Taking notes helps me listen carefully to American class lectures," $\chi^2(1, N = 136) = 6.20$ and $\chi^2(1, N = 127) = 5.64$, respectively, $p<.05$. With the exception of these cases, there appears to have been little difference between frequent and nonfrequent note takers with regard to their opinions about the present note-taking experience or (for academic students) their views about note taking in American classes. Most notably, frequent and nonfrequent note takers differed little in agreement with such statements as "Taking notes helped me to answer the questions

better" or "I felt more at ease when I could take notes than when I could not."

It was also of interest to see whether having had formal instruction in note taking would be related to the students' questionnaire responses. One set of analyses used data from the question, "Have you had any classroom instruction in how to take notes in English?" The group that responded "yes" was compared to the group that responded "no," with respect to answers to the other questionnaire items. Separate analyses were performed for the Note Taking Allowed and Urged conditions. Only the intensive English students were used in this analysis, since too few of the academic students answered "yes" to this question. The two groups did not differ significantly in response to any of the statements in Table 5, and the statements in Table 6 were not applicable to intensive English students. In an additional set of analyses, intensive English students were grouped according to their responses to the question, "Have you had any classroom instruction in how to take notes in a language other than English," and again no significant differences were found between those who responded "yes" and those who responded "no." In general, then, there was little evidence of a relation between having had note-taking instruction and reactions to the present note-taking experience, at least among intensive English students, for whom it was possible to conduct analyses.

Discussion

In considering the implications of the results, it is important to concentrate primarily on the Note Taking Allowed condition, as this condition was the most pertinent to the key issue under study--namely, whether performance on the TOEFL mini-talks is affected by having the opportunity to take notes. A clear finding was that, in the present context, allowing the students to take notes had little effect on their performance.

As discussed in the Introduction, results reported in the literature are mixed with regard to note-taking effects in situations comparable to the one employed here. Studies have observed a positive effect, no effect, or a negative effect, depending on factors related to the testing conditions. One factor that appears to be relevant is the pace of the talk, as note taking can have an interfering effect when the talk is paced too rapidly to allow effective note taking (Peck & Hannafin, 1983). Indeed, in those studies cited earlier that observed a positive effect of note taking, the pace was a relatively slow 100 to 120 words per minute. By contrast, the mini-talks in the present study, as in the TOEFL test, were presented at 145 words per minute, which is a moderate rate of speech (Peters, 1972). The TOEFL mini-talks are designed so a student who is proficient in listening comprehension should be able to understand what is said and remember the key information for at least a short time thereafter. Nevertheless, while the rate of speech used in TOEFL mini-talks is regarded as appropriate for a listening comprehension test without note taking, it may be too rapid to permit the benefits of note taking (if any) to be realized.

The finding that urging the students to take notes actually impaired their performance may also have to do with the pace of the talks. Because the talks were presented at a moderate rate of speech without added pauses, the Note Taking Urged condition may have essentially forced many students to be writing while they would have preferred to be listening. Students' questionnaire responses also suggested that the pace of the talks may have been a factor, as only about one-sixth of the students agreed that they had enough time to take as many notes as they wanted. This was not the case only for the lower proficiency intensive English students; an additional breakdown by intensive English and academic students showed that there was little difference between these two groups with respect to the percentage of students agreeing with the question asking whether there was enough time to take notes (e.g., 17% and 18%, respectively, for the Note Taking Allowed condition). By contrast, more than half of the academic students reported having enough time to take notes in American class lectures.

Another factor in the lack of note-taking effect may have been the relative brevity of the mini-talks, which lasted between 1-1/4 and 1-2/3 minutes, compared with 10 to 30 minutes for the studies cited above that have found a positive note-taking effect. Granted, less than half the students agreed with the statement, "The talks were too short for note taking to help me very much." But students' responses may not be wholly accurate in this case, particularly given that the question effectively involved a comparison with a hypothetical situation--in this case, a comparison between the present

talks and imagined longer talks. From a logical standpoint, it would seem that short talks would provide relatively little opportunity for forgetting to occur and, thus, not allow note taking to have the effect of counteracting forgetting.

An additional basis for the lack of note-taking effect may have been the kinds of questions used. Typically, TOEFL mini-talks are followed by questions that tap general understanding or memory for significant information. Students are not asked to remember very specific details, such as names and dates. Most of the questions deal with information that is specifically stated and does not involve a level of detail that is so minor as to be difficult to retain without taking notes. That the nature of the questions may have been a factor is suggested in the students' widespread agreement with the statement, "Taking notes would have helped me more if the questions had asked about details such as names and dates" (although, again, this involves a comparison with a hypothetical situation). It would appear that the students recognized the memory-aid function of note taking and perceived that this function plays a less important role in the absence of questions about details that can be readily forgotten.

Some research supports a seemingly opposing point of view--that note taking is most likely to have a positive effect when the test questions involve a higher level of information processing. Einstein et al. (1985) found a positive effect of note taking on free recall only for questions about high importance-level propositions. And Peper and Mayer (1978) observed a positive note-taking effect when the test called for interpreting the information presented but a negative effect when the test involved remembering and applying the information. Comparisons among studies are made difficult by the differences in testing conditions. (For example, the lectures in the above-mentioned studies were several times longer than the mini-talks used here.) Nevertheless, a possible hypothesis for further research is that note taking can be useful either (a) as an aid to remembering very minor details that would otherwise be readily forgotten or (b) as a strategy for remembering and interpreting information contained in high importance-level propositions.

The questionnaire, although intended mainly to ascertain students' reactions to the present situation, also obtained useful information about the academic students' general note-taking experiences and habits in American class lectures. The results suggest that these students have a positive view about the value of note taking in the classroom, as the vast majority agreed that note taking is helpful, particularly as an aid for remembering lecture information and for organizing the information and studying after the lecture is over. There was somewhat less (though still majority) agreement that note taking facilitates listening and understanding lectures. Furthermore, the vast majority of students reported taking some or a lot of notes in lectures, and the general preference was to take notes only in English. Particularly noteworthy was that a large majority believed note taking to be more helpful in American class lectures than in the present situation, a view that was also reflected in the relatively low frequency of students who reported taking some notes or a lot of notes in this study.

The students' positive views about classoom note taking are generally comparable to those observed by Dunkel and Davey (1989) in a questionnaire survey of academic international students. Those authors found an agreement rate of at least 83% with statements such as "I find that I get a better exam mark if I take notes," "I find notes taken useful for organizing presented material," and "I take notes to have review material for exams." Also, the most frequently stated reason why note taking is important was to provide a memory aid and/or to remember lecture content. They found that international students were quite similar to American students in all of these respects. In general, then, the available evidence suggests that international students, like American students, feel that note taking is useful in class lectures and that its primary value lies in assisting memory. These highly positive views about note taking in the classroom stand in contrast with the perceived lesser value, and relatively low incidence, of note taking in the present TOEFL mini-talks.

Practical Implications

The practical question underlying this study is whether it would be desirable to allow note taking in the context of the TOEFL mini-talks. Note taking apparently did not prove beneficial to performance, as the students' mean scores were unaffected by the opportunity to take notes. Furthermore, judging from the correlational data, permitting note taking had a minimal effect on the relative standing of the students. And note taking did not appear to alter the test's reliability. So the study provided no evidence that allowing note taking had a beneficial effect on performance or substantially changed what was measured by the test. These findings suggest that there may be little merit in permitting note taking in the TOEFL mini-talks.

On the other hand, one might argue that there could be no harm in permitting students to take notes, considering that the opportunity to take notes (without constraint to do so) at least did not impair performance. This viewpoint appears to receive some support from the students' responses to certain items in the questionnaire. A majority of students indicated that taking notes helped them to answer the questions better, made them feel more at ease, and helped them to remember the information in the talks. Thus, it might be reasoned that, in light of the students' apparently favorable perception of the note-taking experience, allowing note taking in the TOEFL mini-talks might not hurt.

Although the latter point seems reasonable, the authors believe that, on the whole, the weight of the arguments is on the side of not permitting note taking in the TOEFL mini-talks. Despite the apparently positive reaction to note taking on the part of many students, the fact that allowing note taking did not actually improve performance--even for students who claimed that taking notes helped them answer the questions better--shows that the students' self-reported perceptions about the benefits of note taking did not accurately reflect the reality of the situation. Furthermore, if note taking were allowed, with special paper provided, this could send the message that the developers of the test regard note taking as useful in this context. In fact,

the mini-talks are deliberately structured in a way that minimizes the role of factors that might contribute to a beneficial effect of note taking. The questions do not cover the kinds of minor details that are forgotten quickly if not written down. Also, the talks are relatively short, which effectively eliminates both the role of note taking as a means of counteracting forgetting, and the need for outlining and organizing points, which only come into play with more extended discourse. In short, the current TOEFL mini-talks are designed to test comprehension of spoken English rather than memory or the ability to organize text, and they are designed in such a way that satisfactory comprehension should lead to successful performance without need for note taking.

If it were thought important to introduce note taking into the TOEFL listening comprehension section, in order to simulate a lecture-like situation, it would seem most logical to do so in connection with the types of talks and test questions that more closely resemble actual classroom lectures and tests. In this case, the talks would be considerably longer, which could introduce a significant memory factor. Also, the pacing of the talks could include pauses to permit more note taking, and at least some of the test questions could cover the types of information, such as minor details and overall organization of the lecture, that might be most susceptible to note-taking effects.

Even then, one other important practical issue would have to be resolved. Allowing note taking on the TOEFL test poses a security problem, in that pairs or groups of examinees sitting in proximity could use their notes to communicate the answer choices with each other. Test monitors would be unable to detect such activities if the notes were written in a language they could not read, or if the examinees used a code. Thus, if consideration were given to allowing note taking in the TOEFL listening section, it would be essential to find a workable solution to this critical security problem.

Issues for Further Research

The present study, while providing helpful information regarding note taking and TOEFL listening comprehension, calls attention to some additional questions to address in further research. One set of questions concerns the merits of note taking with a lecture format different from that of the current mini-talks. It was suggested above that the lack of a note-taking effect in the present study may have been related to such factors as the brevity of the present mini-talks, the pacing of the talks, or the types of questions asked. These are only hypotheses at this point, however. If a listening comprehension subtest were designed that more closely resembled a classroom lecture and test, with longer talks, slower pacing, or different types of questions, research would be needed to examine the role of note taking in the new context.

Another useful research activity would be to examine the notes taken by students in order to identify characteristics of notes that appear to be most strongly related to successful performance. Such research would extend the work already done on this topic with nonnative English speakers (e.g., Dunkel,

1986, 1988), in this case with particular application to the TOEFL context. A first step could be to examine the notes taken in the present study, since analysis of these notes was beyond the scope of the present research plan. Even more valuable, however, would be an analysis of notes taken in a talk that more closely resembles an academic lecture, considering that such a talk may comprise a more appropriate situation in which to take notes.

It would also be useful to examine differences among major language groups in the effects of note taking. The numbers of students per language group in the present study were insufficient to permit meaningful comparisons (e.g., even the largest group here, the Chinese languages, comprised only one-fourth of the sample). By sampling in a way that yields sufficiently large numbers in key language groups, research can more adequately examine differences among major language groups in effects of note taking, and in note-taking habits and experiences. This research not only could provide interesting basic information about group differences, but could also help determine whether major language groups would be differentially advantaged by the opportunity to take notes in a test of listening comprehension.

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APPENDIX

(MA) Questions 13-17 refer to the following talk related to farming.

(MB) There may be several different ways we can change the ecological balance to improve our crop yield. This can be seen in approaches to dealing with the plain brown garden snail. Commonly served as an entree or appetizer in many restaurants and homes, it is a serious pest in many parts of the United States. In our orange and lemon groves, the garden snail feeds on the citrus trees and makes the fruit unmarketable. The snail is also fond of home garden vegetables, flowers, and ground cover plants. To control these pests, we farmers have used chemical baits, but they've been both costly and ineffective. Now biologists have discovered that some species of flies and beetles found in Europe are efficient predators of the garden snail, and they tell us that it may be possible to transplant them to American citrus groves. If that proves impossible, we may use the smaller, less common mollusk, the decollate [pronounce: deh ka layt] snail that attacks and devours the garden snail. This animal could prove to be the best biological control of the garden snail yet discovered.

13. (MA) What is the main topic of the talk? (12 seconds)

14. (MA) What problem is the speaker concerned about? (12 seconds)

15. (MA) What does the speaker say about chemical baits? (12 seconds)

16. (MA) What might experts do with certain European flies and beetles? (12 seconds)

17. (MA) What can be inferred about the future of the decollate [pronounce: deh ka layt] snail? (12 seconds)

Answer Options in Test Booklet

13. (A) Types of agricultural pests in the United States.
    (B) Marketability of the brown garden snail.
    (C) Control of the brown garden snail.
    (D) Recent changes in restaurant menus.

14. (A) A declining demand for citrus fruit.
    (B) An inability to transplant certain citrus trees.
    (C) The lack of appropriate fertilizers.
    (D) Destruction of crops by snails.

15. (A) They are extremely effective.
    (B) They have just been developed.
    (C) They cost a great deal.
    (D) They harm fruit and vegetables.

16. (A) Destroy them.
    (B) Import them to the United States.
    (C) Use them to test chemical pesticides.
    (D) Feed them to garden snails.

17. (A) It may be eaten in place of the brown garden snail.
    (B) It may prove harmful to citrus plants.
    (C) It may be used to control agricultural pests.
    (D) It may become less costly.



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